

WHAT IS CLAIMED IS:

- 5 ~~1. A semiconductor device, comprising:~~
- ~~a portion to be measured by fluctuation in potential;~~
- ~~a wire having one end and the other end connected with said portion to be measured; and~~
- ~~an observation part connected with said one end of said wire,~~
- ~~wherein said observation part includes a pn junction irradiated with a laser beam to detect said fluctuation in potential, and~~
- 10 ~~said pn junction includes a first impurity region of a first conductivity type connected with said one end of said wire and a second impurity region of a second conductivity type.~~
- 15 ~~2. The semiconductor device according to claim 1, wherein said first impurity region is formed within said second impurity region.~~
- ~~3. The semiconductor device according to claim 2, wherein said observation part includes a first MOS transistor having said first impurity region as a source/drain region.~~
- 20 ~~4. The semiconductor device according to claim 3, wherein said first MOS transistor includes a gate electrode set to be the same in potential as said second impurity region.~~
- 25 ~~5. The semiconductor device according to claim 3, further comprising a second~~

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MOS transistor including said portion to be measured,

wherein said first MOS transistor and said second MOS transistor are arranged in a same gate array.

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6. The semiconductor device according to claim 5, wherein said portion to be measured is a gate electrode of said second MOS transistor.

7. The semiconductor device according to claim 5, wherein said portion to be measured is a source/drain region of said second MOS transistor.

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8. The semiconductor device according to claim 5, wherein said portion to be measured is a well region of said second MOS transistor.

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9. The semiconductor device according to claim 1, further comprising a wire to be measured including said portion to be measured.

10. The semiconductor device according to claim 9, wherein said observation part includes:

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a third impurity region connected with a second portion to be measured different from said portion to be measured and made conductive with said wire to be measured; and

a fourth impurity region having a conductivity type opposite to a conductivity type of said third impurity region.

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11. The semiconductor device according to claim 1, wherein

said first conductivity type is an n type and said second conductivity type is a p type;

said observation part further includes a second pn junction having a p-type third impurity region connected with said wire and an n-type fourth impurity region; and

5 a first fixed potential is applied to said second impurity region and a second fixed potential higher than said first fixed potential is applied to said fourth impurity region.

10 12. A method of analyzing the semiconductor device recited in claim 1, comprising the steps of:

- (a) irradiating said pn junction with a laser beam; and
- (b) measuring light intensity of said laser beam reflected at said pn junction.

15 13. A method of analyzing the semiconductor device recited in claim 2, comprising the steps of:

- (a) irradiating said pn junction with a laser beam; and
- (b) measuring light intensity of said laser beam reflected at said pn junction.

20 14. A method of analyzing the semiconductor device recited in claim 3, comprising the steps of:

- (a) irradiating said pn junction with a laser beam; and
- (b) measuring light intensity of said laser beam reflected at said pn junction.

25 15. A method of analyzing the semiconductor device recited in claim 4, comprising the steps of:

- (a) irradiating said pn junction with a laser beam; and
- (b) measuring light intensity of said laser beam reflected at said pn junction.

16. A method of analyzing the semiconductor device recited in claim 5,
5 comprising the steps of:

- (a) irradiating said pn junction with a laser beam; and
- (b) measuring light intensity of said laser beam reflected at said pn junction.

17. A method of analyzing the semiconductor device recited in claim 6,
10 comprising the steps of:

- (a) irradiating said pn junction with a laser beam; and
- (b) measuring light intensity of said laser beam reflected at said pn junction.

18. A method of analyzing the semiconductor device recited in claim 7,
15 comprising the steps of:

- (a) irradiating said pn junction with a laser beam; and
- (b) measuring light intensity of said laser beam reflected at said pn junction.

19. A method of analyzing the semiconductor device recited in claim 8,
20 comprising the steps of:

- (a) irradiating said pn junction with a laser beam; and
- (b) measuring light intensity of said laser beam reflected at said pn junction.

20. A method of analyzing the semiconductor device3 recited in claim 9,
25 comprising the steps of:

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- (a) irradiating said pn junction with a laser beam; and
(b) measuring light intensity of said laser beam reflected at said pn junction.

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